III

Emerging Markets in the New International Financial System: Implications of the Asian Crisis

The Mexican crisis of 1994–95 and the ongoing crisis in Asia have raised issues regarding the effects of global integration, the sustainability of the linkages between emerging capital markets and more developed ones, and the management of risks associated with surges of capital inflows followed by possible cessation, or at least a substantial reduction, in such flows. A number of these issues are examined in this chapter. The first section considers the similarities and differences among the recent Asian crisis, the Mexican crisis of 1995, and the debt crisis of the 1980s. The second section analyzes the price and market dynamics that affect the terms and conditions under which countries obtain international finance and factors that contribute to surges in capital flows. Assuming that sharp changes in capital movements are likely to be a feature of the new global financial environment, the third section examines what the experience of the 1990s implies about the policies and institutional arrangements that are needed to manage the macroeconomic and financial risks created by large-scale capital inflows. The last section contains some concluding remarks.

Is the Asian Crisis a New Type of Systemic Crisis?

The dramatic changes in capital flows and in exchange rates and other asset prices during the Asian crisis have raised the issue of whether this was a new type of systemic crisis or if it shared many of the characteristics of earlier systemic crises such as those experienced by many heavily indebted emerging markets in the early 1980s and by Mexico in 1994–95. Each of these crises has been viewed as systemic because they resulted in (1) an abrupt reduction in or complete loss of access to global capital markets for the affected countries; (2) spillover effects to countries viewed by market participants as being in similar conditions; (3) severe currency and banking stress in the affected countries; and (4) perceptions that banking and securities markets in mature economies could be deeply affected if there were widespread defaults on emerging market's external obligations.

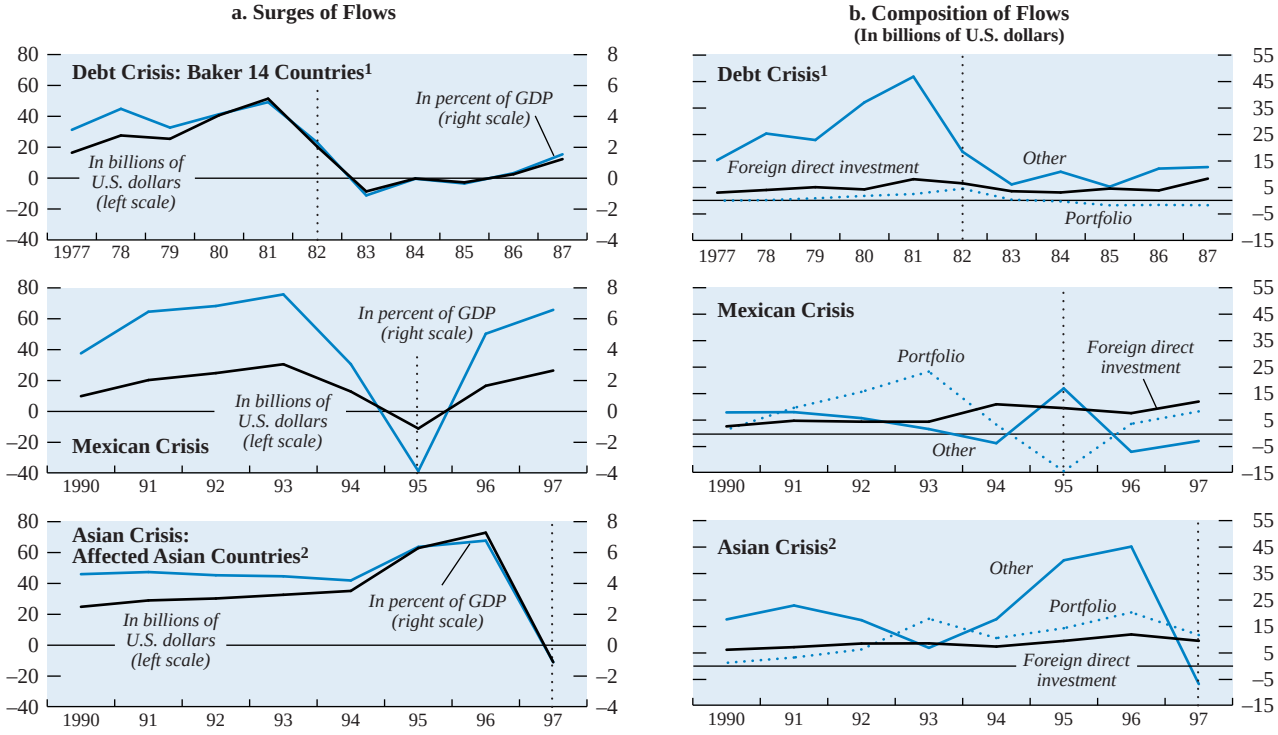
While it is evident that all three major crises—the debt crisis of the 1980s, the Mexican crisis of 1994–95, and the Asian crisis—shared common elements, there were also some key differences. The broad similarities were that each crisis was preceded by a surge of capital into the affected countries, by access to international markets at favorable terms, and by rapid growth of external debt combined with increased exposures to movements in interest rates and exchange rates. When the crises broke there were an abrupt loss of market access and spillover effects to other similarly placed economies. All the crises took place in the context of weak and inadequately supervised financial systems, and the eventual resolution involved, in varying degrees, debt restructuring by public and private borrowers. The macroeconomic settings of individual countries, however, did display some contrasts. Other key differences related to the mix of private and public borrowing, the composition of inflows, the international environment in which the crises played out, and, in the wake of turmoil, the extent of questioning of the development strategies being followed by the affected countries at that time.

The Similarities

Each of the crises was preceded by a surge of capital inflows to a broad range of countries and, at least in the 1990s, by sharp improvements in the terms and conditions under which emerging markets could access global financial markets (see Figure 3.1 and Chapter II). The capital flows that took place between the first oil crisis of 1973 and 1982 were linked to the recycling of oil revenues. During that period, net private capital flows to emerging markets (mainly in the form of syndicated loans) amounted to $165 billion (about 1 percent of emerging markets' GDP in that period) and reflected large-scale borrowing by Asian and Latin American entities. The Mexican and Asian crises were also preceded by record capital inflows, and total net private capital flows to emerging markets between 1990 and 1996 soared to $1,040 billion (about 3 percent of their GDP in that period) with Asia and Latin America receiving 40 percent and 30 percent of these flows, respectively.

During most of the 1970s, many emerging market borrowers faced low or even negative real interest rates on their international borrowing. Between 1973

Figure 3.1. Surges and Composition of Private Capital Flows Prior to Crises



Source: International Monetary Fund, *World Economic Outlook* database.

[1]Aggregate flows to the Baker 14 countries: Argentina, Brazil, Bolivia, Chile, Colombia, Côte d'Ivoire, Ecuador, Mexico, Morocco, Nigeria, Peru, the Philippines, Uruguay, and Venezuela.

[2]Aggregate flows to Thailand, Malaysia, Indonesia, Korea, and the Philippines.

and 1978, for example, the three-month LIBOR, which often served as the base for the interest rate spreads on syndicated loans to emerging market countries, averaged about 8 percent a year, whereas export unit values (measured in U.S. dollars) rose at an annual rate of over 15 percent a year. However, interest costs rose sharply in the late 1970s as a number of industrial countries, particularly the United States, tightened monetary policy to combat inflation.

Similarly, the first half of the 1990s witnessed a sharp improvement in the terms and conditions under which emerging markets could access global financial markets. Yield spreads on Brady bonds fell from an average of 1,100 basis points over comparable maturity U.S. treasury bonds in 1990 to a pre-Mexican-crisis low of just under 400 basis points in December 1993. While these spreads jumped sharply in early 1995 (reaching 1,550 basis points in March 1995), they subsequently declined to 350 basis points by September 1997 just prior to the pressure on the Hong Kong dollar. In addition, average maturities on new Eurobond issues climbed from 4.4 years in 1991 to 8 years by 1996.

Another common element in all three crises was the extent to which borrowers had unhedged exposures to interest rate and exchange rate movements. During the 1970s, the use of syndicated loans usually denominated in U.S. dollars and priced at spreads over LIBOR meant that debtors took an open position regarding the interest rate and currency risks associated with such borrowings. While these external debt positions were hedged to some degree by the countries' holdings of U.S.-dollar-denominated reserves, there were relatively few financial instruments in the 1970s to facilitate further hedging of such positions.

What is surprising, however, is that despite the explosive growth of global derivative products in the 1990s, unhedged currency and interest rate exposures were key determinants of the severity and scope of the Mexican and Asian crises. Indeed, at times the authorities and private sector entities took steps that increased their exchange rate exposures just prior to the crises in the 1990s. For example, in 1994, to facilitate the refinancing of their domestic debt and to signal a commitment to their exchange rate arrangement, the Mexican authorities shifted from issuing peso-denom-

inated debt (mainly Cetes) to short-term debt securities (Tesobonos) whose debt-service payments were made in pesos but indexed to the U.S. dollar exchange rate.[1]

The exposure of nonfinancial corporations to foreign exchange risk played a key role in the Asian crisis. Asian firms, enjoying increasing access to global financial markets, were able to issue large amounts of securities denominated in foreign currency in addition to obtaining foreign currency loans from both domestic and international banks. A number of factors appear to have motivated corporations to take on these large unhedged exposures. Most important, domestic interest rates were higher than foreign interest rates in Asian countries that used the exchange rate as a nominal anchor. Corporations often left foreign debt exposures unhedged because domestic hedging products were undeveloped and/or purchasing offshore derivative products would have reduced the cost advantage of borrowing abroad. Such behavior was also reinforced by the view that there was little need to hedge because the authorities had established a credible commitment to an exchange rate peg or a preannounced crawl.

A feature common to all three crisis periods was the lack of transparency regarding the operation of the financial system and regulatory regime. While the financial systems of most emerging markets were much more controlled in the 1970s than in the 1990s, both the repressed financial systems of the 1970s and the liberalized systems of the 1990s had serious structural weaknesses. In the 1970s, the financial environment of many emerging markets was characterized by tight constraints on external financial transactions, directed credit allocation by domestic institutions, and ceilings on loan and deposit interest rates (McKinnon, 1973). These extensive restrictions, by confining bank operations to approved or priority activities, often led to undiversified loan portfolios that soon contained a significant share of nonperforming or poorly serviced loans. Moreover, the panoply of controls on banking activities stultified the development of prudential supervisory systems. In the early 1980s, nine heavily indebted emerging markets experienced banking crises as corporate and state enterprises faced difficulties in meeting their debt-service obligations (Lindgren, Garcia, and Saal, 1996).

In late 1994 and early 1995, concerns about the health of the banking system undermined a credible defense of the Mexican peso. From mid-1990 to mid-1992, 18 Mexican banks that had been nationalized in 1982 were sold back to the private sector. As part of a program of financial liberalization, interest rates were freed, credit controls and lending restrictions were removed, and compulsory liquidity ratios were abolished.[2] This liberalization was accompanied by a rapid expansion of bank credit, with net credit to the private sector expanding at an average annual rate of 66 percent in nominal terms. Even by 1993, however, concerns about the quality of banks' loan portfolios had led to a sharp slowdown in the rate of expansion of bank credit. The sharp depreciation of the peso and the increase in interest rates in the aftermath of its flotation contributed to a further deterioration of bank portfolios as domestic corporations found it increasingly difficult to service their debt obligations, especially those denominated in foreign currency.

While some improvements in prudential supervision and regulation were undertaken in Asian economies in the first half of the 1990s, remaining inadequacies as well as the limited experience of financial institutions in the pricing and management of risk contributed to imprudent lending, including lending to related parties. Private corporations, in turn, underestimating the risk of domestic and foreign borrowing, became highly leveraged and exposed to movements in interest rates and exchange rates. Weak balance sheets, which had been camouflaged by the spectacular growth rates of the earlier years, were exposed in 1996–97. Rising interest rates, depreciating currencies, collapsing real estate and equity prices, and the precarious situation of many corporations led to a sharp deterioration in asset quality, causing considerable stress in the banking systems and some full-fledged banking crises.[3]

In each instance, the crisis was unanticipated by most market participants. In 1982, bond and loan interest rate spreads were stable in the months leading up to the July 1982 announcement by Mexico of its debt-servicing difficulties. Also, there had been an increase in bank lending in 1981 to every country that was obliged in 1982 and 1983 to restructure its external debt.[4]

In the 11 months leading up to December 1994, Mexican interest rates, stock prices, and the peso-dollar exchange rate all experienced periods of turbulence. Market indicators and commentators pointed to a serious weakening of confidence from the time of the Colosio assassination in March until just before the election in August (when it became apparent that the ruling party would win the election), but market indicators and commentary "turned up" in the second half of the year, right up to the time of the final attack on the currency and the December devaluation. Even

[1]Tesobonos increased from 6 percent of total Mexican government securities outstanding at the end of February 1994 to 50 percent at the end of November 1994.

[2]The nature of this liberalization and the events leading up to the 1994 Mexican crisis are analyzed in Annex I of International Monetary Fund (1995a).

[3]For a more comprehensive discussion, see International Monetary Fund (1996, 1997a, 1997b, and 1998).

[4]See James (1996), pp. 351–62.

though Mexico experienced considerable political uncertainty, a loss of foreign exchange reserves, and growing difficulties in funding its short-term debt, the 1995 Capital Markets report concluded that the decision to float the peso "took international investors by surprise, despite warnings from several noted economists and market commentators."[5]

Most investors were also surprised by the scope and intensity of the Asian crisis, in part because of the strong record in the 1990s of growth and stability in the affected countries, as well as what were perceived as cautious fiscal policies. Yield spreads on bonds and syndicated loans declined for most Asian economies between mid-1995 and mid-1997, and with the exception of the Philippines, which was upgraded in early 1997, no sovereign credit rating was changed throughout 1996 and the first half of 1997. Figure 3.2 shows that in the months leading up to the July 1997 float of the Thai baht, Eurobond spreads for Indonesia, Malaysia, the Philippines, and Thailand fluctuated in relatively narrow ranges and clearly did not presage the upheavals that followed. Spreads rose between July and October, but it was not until the depth of the Korean predicament became known and the speculative attack on the Hong Kong dollar in October that they spiked upward.

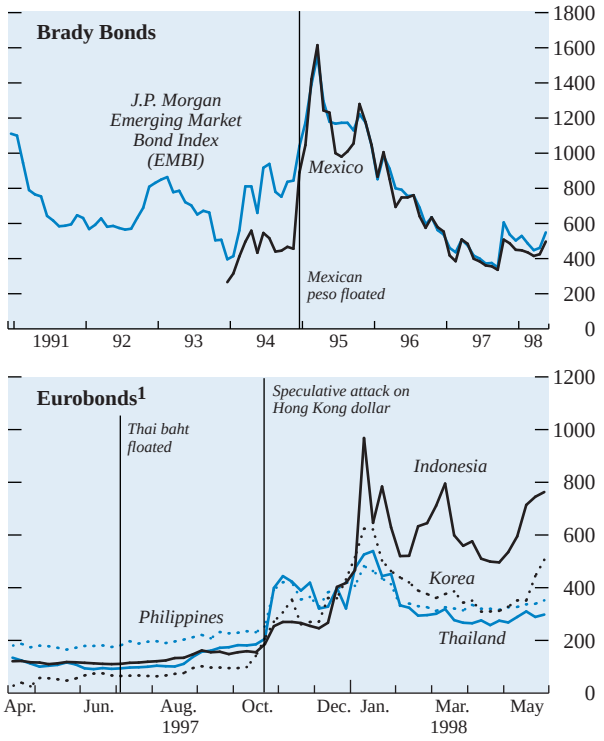
All three crises were accompanied by extensive spillover effects. In 1982, although there was initially the hope that Mexico's debt-service problems were specific to that country, debt-servicing difficulties soon spread to most Latin American countries and to some countries in Asia and Africa "as international bankers tried to rescue their balance sheets by withdrawing credits from those countries that had not yet demanded a rescheduling. Such action forced countries into illiquidity, and also created an incentive for likely debt problem countries to suspend payments and renegotiate their credits as soon as possible."[6]

The 1995 Mexican peso crisis also produced a fundamental reevaluation of the risks associated with investing in emerging markets, and the larger Latin American countries experienced varying degrees of turbulence in their foreign exchange markets and declines in their equity markets.[7] While Asian markets were not initially affected in December 1994, their currencies came under attack in mid-January 1995, and securities markets in some of them experienced sharp declines amidst uncertainty about whether Mexico could meet its debt-service obligations and whether a sufficiently large international support package could be put in place. The extensive contagion associated with the Asian crisis is described in Chapter II. The floating of the Thai baht in mid-1997 led to a reassessment of prospects for "similarly situated countries" and the spread of contagion in the region and afar was all the more rapid because the usual trade linkages among countries had been overlayed with increasing financial linkages in the 1990s.

In all three crises, the spread of contagion across countries was worsened by weak banking systems. As already noted, a large number of heavily indebted emerging markets experienced systemic banking crises at the same time that they lost access to global financial markets in 1982. For example, in Chile the authorities were forced to provide assistance to virtually all domestic banks.

In the Mexican crisis, the banking system—which had already seen past-due loans increase sharply from 35 percent to 98 percent of total bank capital in 1994—experienced a further sharp rise in the stock of nonperforming loans during February–March 1995 as a growing number of nonfinancial firms faced diffi-

Figure 3.2. Secondary Market Bond Spreads
(In basis points)



Sources: Bloomberg Financial Markets L.P.; and J.P. Morgan.

[1]Republic of Indonesia bond due 8/06, Korea Development Bank bond due 2/02, Republic of Philippines bond due 10/16, and the Kingdom of Thailand bond due 4/07.

[5]International Monetary Fund (1995b), p. 5. See also Edwards (1998).

[6]James (1996), p. 388.

[7]See International Monetary Fund (1995a).

culties in meeting their debt-service obligations to the banks.[8] Similar concerns in Argentina led bank deposits to fall by 16 percent (more than $7.5 billion) between mid-December 1994 and end-March 1995. Since Argentina employed a currency board arrangement, foreign currency withdrawals translated into contractions of the monetary base and, via the money multiplier, into declines in domestic credit and a sharp rise in domestic interest rates.[9]

Once the Thai baht depreciated in July 1997, the currencies that came under immediate pressure were those that investors viewed as having "similar" fundamentals, including appreciated real exchange rates, and banking systems potentially exposed to nonperforming loan problems because of a rapid expansion of bank credit that had contributed to a rise in asset prices and an increase in speculative investments. Moreover, as the crisis widened, financial fragility was at the center of a vicious circle. Beliefs that authorities could not sustain high interest rates to defend currencies in deference to weak financial systems led to speculative pressures on currencies. As the currencies depreciated sharply, the financial positions of both nonfinancial corporations and banks deteriorated further, and the proportion of nonperforming bank loans increased, raising concerns about the fundamental soundness of the banking systems, which in turn further undermined investor confidence.

Debt restructuring was a key element in the final resolution of all three major crises. In the 1980s, much of the focus was on the restructuring of sovereign foreign currency obligations since in many cases the foreign currency debt of the domestic banks had been either assumed or guaranteed by the authorities. Voluntary debt relief was the cornerstone of the plan proposed by the U.S. Treasury Secretary Nicholas Brady in 1989. Along with a decline in international interest rates, the reschedulings were helpful in eliminating the effects of the "debt overhang" that had discouraged investment in debtor countries because of the high levels of taxation that would have been required to service the original debts.

While the Mexican authorities fully serviced their official domestic and foreign currency denominated obligations during the 1995 crisis, there were extensive restructurings of the nonfinancial sector's domestic bank loans as well as its external commercial bank and Eurobond obligations.[10] In Asia, the restructuring process is still in its initial stages.

Some Differences

Purely on the basis of macroeconomic factors, it is difficult to argue that the Asian economies in 1996 were poised for the kind of turmoil that afflicted them in 1997 and 1998.[11] Figure 3.3 uses the average performance in 1995 for nine emerging markets that had sovereign ratings before 1990 (the base group) as a metric to compare the macroeconomic fundamentals on the eve of the Asian crisis, the Mexican crisis, and the debt crisis.[12] For each macroeconomic variable, the value of that variable for a particular country at any time was normalized using the mean and standard deviation of that variable for the base group in 1995.[13] These normalized or standardized variables are then plotted in the figures with a movement away from the origin signifying a deterioration and a movement toward the origin signifying an improvement. For example, the value of 2 calculated for the variable *EDY* for Indonesia in 1996 implies that Indonesia's external debt to GDP ratio was 2 standard deviations above the average for the base group in 1995. Use of a common metric also implies that the figures for the different countries can be compared with each other.

The figures suggest three conclusions. First, the 1996 macroeconomic fundamentals of the affected Asian countries were in most respects comparable to the base group average in 1995. With the exception of Indonesia, while the external debt to GDP ratios were higher in 1996 for Thailand, Malaysia, and the Philippines, the external debt to exports and the debt-service ratios were comparable or better than the comparator group average in 1995. Second, the 1996 macroeconomic situation of the Asian countries was by and large better than the situation of Mexico in 1994.

[8]To deal with this situation, the Mexican authorities introduced in early 1995 a measure that allowed banks whose risk-weighted capital to asset ratio was below 8 percent to borrow funds from the deposit guarantee fund, the Fondo Bancario de Protección al Ahorro (FOBAPROA), by issuing five-year subordinated debt with explicit conversion rules. In addition, a plan was introduced to allow banks to remove and restructure nonperforming loans from their balance sheets.

[9]Argentina's foreign exchange reserves fell by 40 percent between end-December 1994 and end-March 1995 and prime interest rates tripled over the same period reaching 50 percent in March 1995.

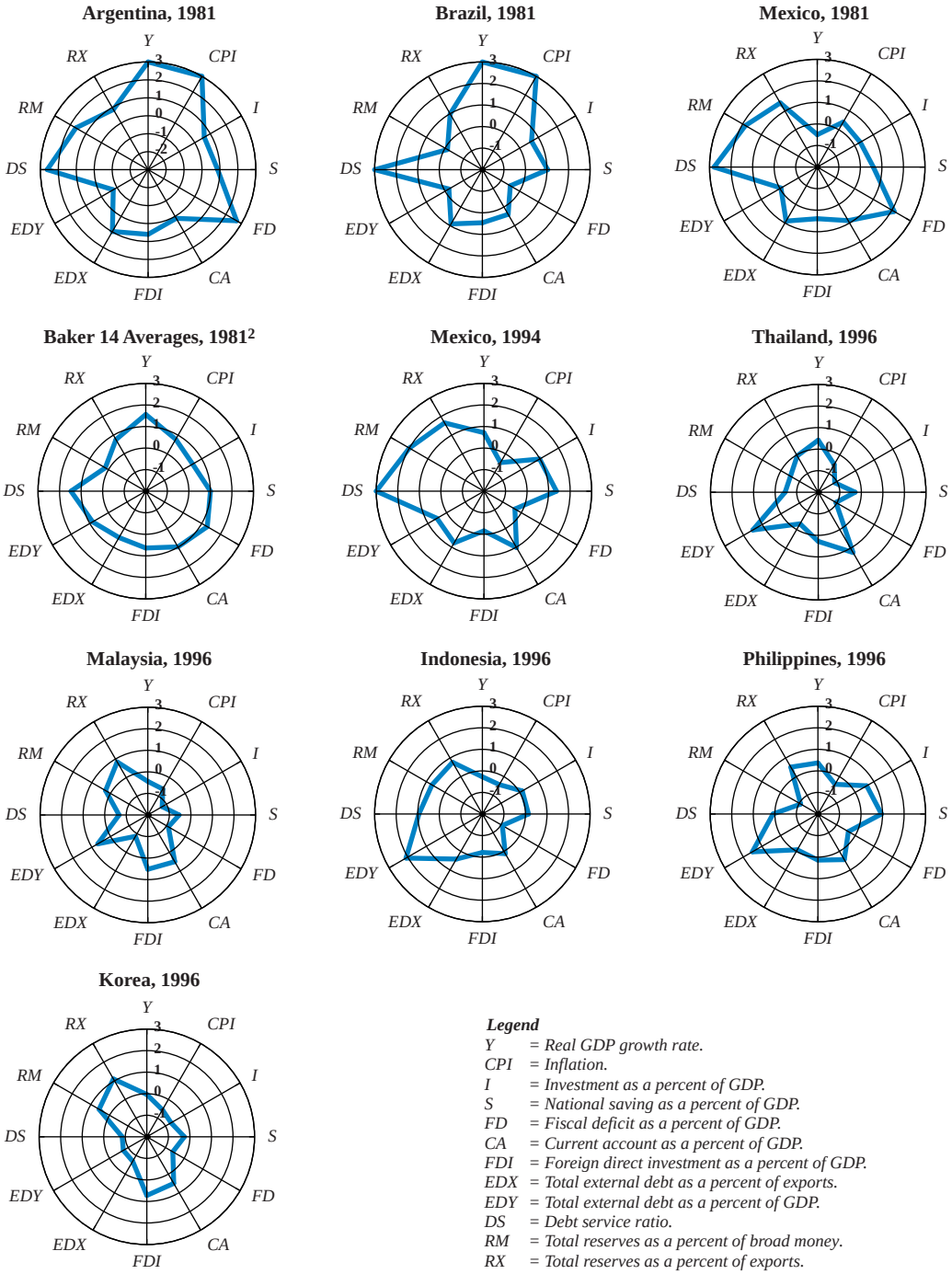
[10]See, for example, Darrow and others (1997).

[11]See International Monetary Fund (1997b, 1998) for a detailed discussion of the fundamentals prior to the Asian crisis. It is worth noting that conventionally measured fundamentals need not contain the whole story. For example, investment ratios say nothing about the quality of investment, fiscal deficits ignore quasi-fiscal and contingent fiscal liabilities, and external debt calculations may not be as comprehensive as desired.

[12]The nine countries comprising the group that first received a sovereign rating before 1990 (and hence had something of a track record) are Argentina, Brazil, China, India, Korea, Malaysia, Singapore, Thailand, and Venezuela. Note that the base group calculations (of mean and standard deviation) for real GDP growth are based on an average for the years 1993–95, and the calculations for the current account deficit and central government deficit exclude Singapore since it is an outlier in these dimensions.

[13]Normalized or standardized variable = (variable – mean of base group in 1995)/(standard deviation of base group in 1995). Also, for ease of exposition, the normalized variables for the plots have been truncated and are bounded by +3 and –3.

Figure 3.3. Comparing Economic Fundamentals Prior to the Debt, the Mexican, and the Asian Crises[1]

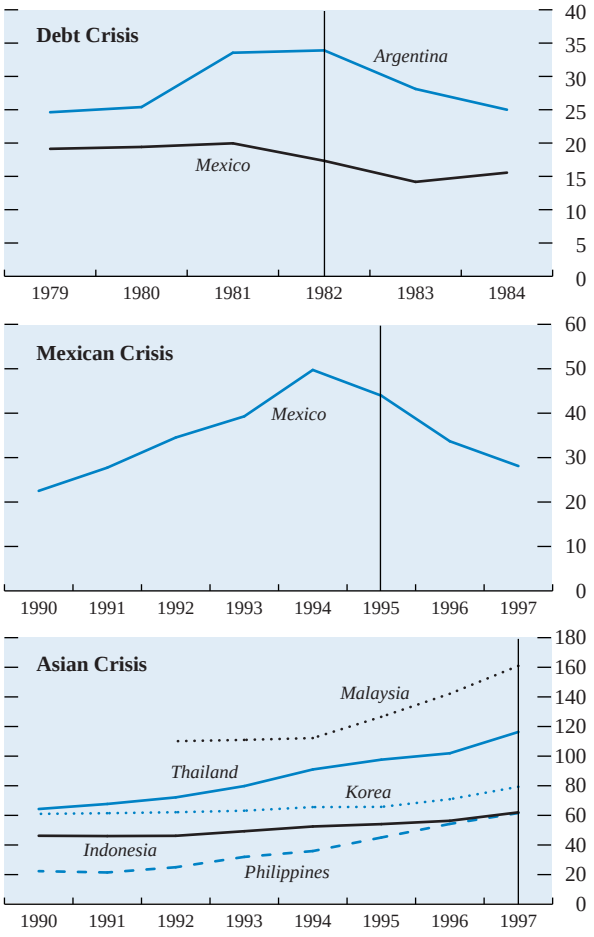


Source: International Monetary Fund, *World Economic Outlook.*

[1]The figures plot a standardized value, lying between +3 and –3, for each macroeconomic variable. Note that for all variables a movement away from the origin signifies a deterioration. See text for full explanation.

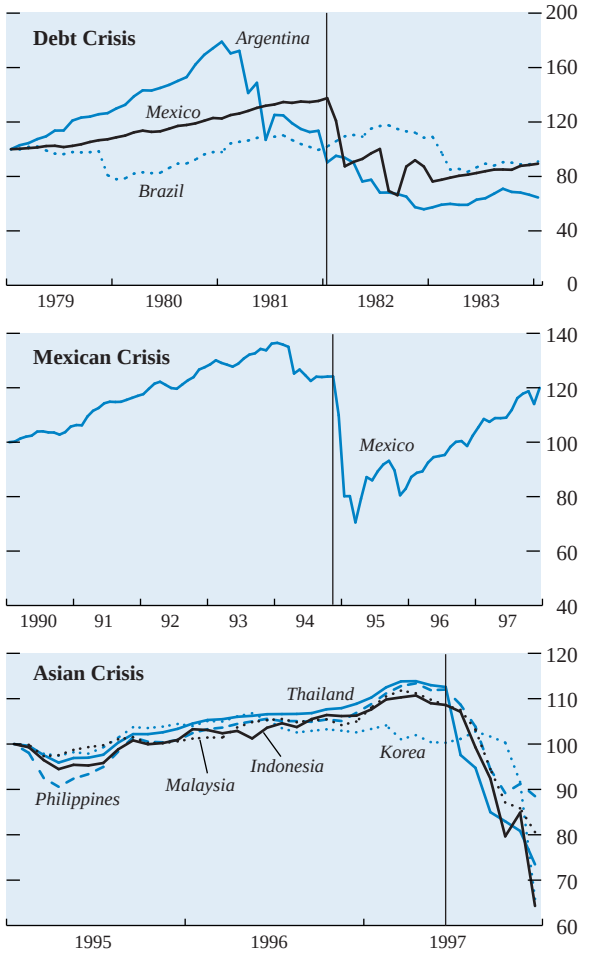
[2]The Baker 14 countries are Argentina, Brazil, Bolivia, Chile, Colombia, Côte d'Ivoire, Ecuador, Mexico, Nigeria, Peru, the Philippines, Uruguay, and Venezuela.

Figure 3.4. Claims of Banking Institutions on the Private Sector
(In percent of GDP)



Sources: International Monetary Fund, *International Financial Statistics*, and *World Economic Outlook.*

Figure 3.5. Real Effective Exchange Rate Appreciation Prior to Crises[1]



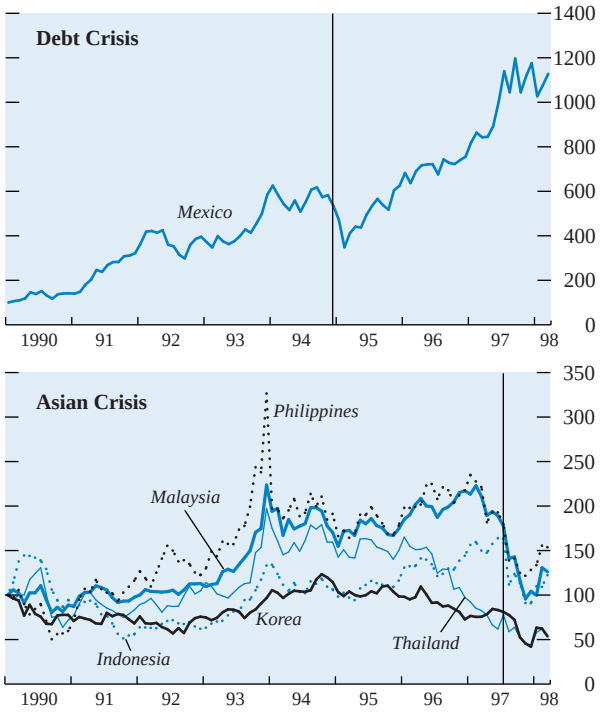
Source: International Monetary Fund.
[1]Increase signifies real appreciation.

Third, economic fundamentals were clearly stronger in Mexico in 1994 compared with its situation and that of other highly indebted countries in 1981.

Rapid domestic credit growth, real exchange rate overvaluations, and declining stock markets could be construed as providing some indication of brewing trouble in Asia (Figures 3.4, 3.5, and 3.6). Between 1990 and 1997 claims of banking institutions on the private sector as a percent of GDP almost doubled in Thailand and rose in the other countries, especially after 1994. Real exchange rates, which showed negligible changes over the 1990–95 period, appreciated modestly (up to 15 percent) over the 1995–97 period, but such appreciations were small compared with Mexico in 1994 or 1981. Even these indicators, though suggestive of needed policy corrections, cannot be seen to have provided signs of the depth of the crisis that eventually engulfed Asia.

The global economic environment prior to and on the eve of the debt crisis of the 1980s was fundamentally different from that in the 1990s. Growth in the mature market countries slowed sharply in the late 1970s, declining from an average rate of growth of 4 percent in 1978 to little more than 1 percent in 1981. This prolonged sluggishness of activity in the mature markets contributed to a decline in the growth of exports and a deterioration in the terms of trade for many non-oil emerging market countries. At the same time, as part of efforts to curb inflationary pressures in the mature markets, interest rates in major markets rose sharply from the late 1970s to 1981. Since the interest rates on many of the syndicated loans to emerg-

Figure 3.6. Stock Market Price Indices in Local Currencies
(January 1990 = 100)



Source: International Finance Corporation, Emerging Market Data Base.

ing market borrowers were tied to LIBOR, these countries experienced a sharp rise in their debt-service payments.

The global situation confronting emerging markets in the 1990s has been more favorable than in the late 1970s. In the 1990s, the mature markets have been characterized by low and declining inflation and nominal interest rates. The declines in asset yields in mature markets made emerging market investments appear increasingly attractive and there was a decline of risk premiums in many asset markets, apparently signifying a shift in preferences toward greater risk tolerance and/or a perception that risks had declined. Moreover, while the mature markets were headed toward a recession in the early 1980s that reduced the expansion of world trade, world trade has expanded at an annual rate of over 6 percent during 1990–96. However, it is worth mentioning that the increase in U.S. interest rates did lead to a more pessimistic assessment of Mexico's prospects in 1994 and the upswing in the value of the U.S. dollar (especially vis-à-vis the Japanese yen) in the months preceding the Asian crisis adversely affected the competitive position of Asian countries pegged to the U.S. dollar.

As private capital flows surged during the 1990s, the relative importance of official capital flows declined sharply, and there was increasing intermediation of funds between private parties, especially nonfinancial entities. Whereas official capital flows to emerging markets represented 49.5 percent of total capital flows in 1970–81, they accounted for only 9.5 percent of total flows in 1990–96. As already noted, total net private capital flows to emerging markets totaled over $1 trillion in the first half of the 1990s. Renewed market access in the 1990s also saw a dramatic change in the composition of private flows—the share of foreign direct investment and portfolio flows in total net private flows over 1990–96 reached 40 percent and 39 percent, respectively.

Another difference between the crises has been the effect they have had on the development strategies pursued by the affected countries. Prior to the debt crisis, many countries pursued an import-substitution strategy behind high tariff walls, and supported it by financial policies that, besides establishing low (relative to domestic inflation) interest rate ceilings on bank loans and deposits, directed bank loans to certain priority sectors of the economy. To prevent domestic residents from fleeing these repressed financial systems, there were systems of extensive capital controls. External borrowing was typically undertaken by the public sector (including state-owned banks), and often used to partially finance budget deficits. Such systems discouraged exports both directly (by taxes, limits on credit availability) and indirectly (to the extent that exporters had to use high-cost domestically produced goods). The 1980s provided ample evidence of the shortcomings of the closed-economy import substitution model and by the beginning of the 1990s, many emerging market economies had embraced a more outward orientation that, in varying degrees, included liberalization of external trade and financial transactions, fiscal conservatism, structural reforms designed to increase the flexibility of domestic goods and factor markets, and an enlargement of the role played by the private sector.

Neither the Mexican crisis of 1995 nor the Asian crises of 1997–98 has as yet produced a comparable change in development strategies. Indeed, in the aftermath of the Mexican crisis, the authorities in many Latin American countries strengthened their commitment to maintaining the open economy strategies they had pursued during the first half of 1990s. Many market participants regarded such a commitment on the part of the Mexican authorities as a key factor in explaining the rapid return of Mexico to global financial markets by the last quarter of 1995.[14] However, these

[14]A comparison of the factors that led to the crises in Mexico and Thailand is provided in Box 1 of International Monetary Fund (1997b).

crises have led to a reexamination of the "Asian model of development," made clear that a resilient, transparent, and well-regulated financial system is a prerequisite for full capital account liberalization, and emphasized that developing countries need better institutions to shield the more vulnerable segments of society from wild swings in economic activity and to forge a more durable consensus for global integration (Hausmann, 1997).

The remainder of this chapter examines two sets of issues raised by the above analysis. First, it analyzes the market dynamics that generate the observed pattern of capital movements—a surge in capital flows combined with significant improvements in the terms and conditions governing market access, followed by an abrupt loss of market access and sharp declines in the prices of claims on emerging markets, often accompanied by widespread spillovers to other economies in the region or at a similar level of development. Second, to the extent that such dynamics are likely to be a recurrent feature of the global financial system, it examines what policies can help countries manage the macroeconomic and financial risks associated with large-scale and potentially volatile capital flows. Particular attention is paid to the specific problems raised or highlighted by the Asian crisis.

Capital Flows and Market Dynamics

The increasingly integrated global financial system has produced important efficiency gains, but the new system's market dynamics are still not fully understood. When global markets appropriately price the risks and returns associated with different investment activities, cross-border capital flows tend to bring about an efficient allocation of global savings to its most productive uses.[15] Moreover, cross-border portfolio flows and foreign direct investment can help investors reduce risk by allowing for more diversified portfolios. In addition, the involvement of foreign financial institutions in domestic markets can be an important vehicle for improving financial management, encouraging the adoption of new financial technologies and introducing a greater degree of competition.

Terms and Conditions for Market Access

While there is general agreement about the nature of the potential benefits that well-functioning global capital markets can generate, there has been much more controversy about the markets' ability both to generate a sustainable flow of capital to emerging markets and to evaluate and price the credit risks associated with different borrowers. Some observers have argued that investors have strong incentives to acquire information that allows them to be informed and discriminating. They cite the expanding activities of credit rating agencies and the growth of the research staffs of investment banks and other large institutional investors as examples of this expanded effort. However, others have emphasized the high costs of acquiring and processing information and stressed that risks are often priced with incomplete information about a borrower's economic and financial condition. For example, Calvo and Mendoza (1998) construct a theoretical model in which insufficiently informed investors fail to raise the risk premium on a country's securities in response to small changes in economic conditions, but respond sharply to more substantially adverse news by attaching a high risk premium on borrowings and/or cutting back on the availability of funds to a country, and abruptly revising expectations about developments in other countries with "similar" characteristics.

Two recent studies shed some light on the relevance of these competing hypotheses by attempting to identify the determinants of interest rate spreads on international bonds issued by emerging markets during the 1990s. Cline and Barnes (1997) estimate a model that relates quarterly interest rate spreads on sovereign international bonds issued by a group of emerging markets and mature European markets countries for the period 1992–96 to a set of economic fundamentals. Economic fundamentals for the second quarter of 1997 are used to predict the levels of the interest rate spreads that would have been expected on the basis of the relationship between spreads and economic variables in the 1992–96 period. They find that most countries had actual interest rate spreads lower than the predicted spreads and the authors conclude "on the basis of the average relationships between emerging market spreads and economic performance, the results indicate that after having been unusually high in 1994 for Europe and 1995 for Latin America, by 1996 and especially mid-1997 spreads were unusually low in both areas relative to levels that would have been expected on the basis of economic fundamentals in the borrowing countries" (p. 20). Since interest rate spreads on syndicated loans declined by a much smaller amount than spreads on Eurobonds, the authors suggest that investors in the rapidly growing Eurobond market may have had less experience in evaluating risk than those in the syndicated loan market.

Eichengreen and Mody (1998) examine data on about a thousand emerging market international bonds launched in the years 1991–97. In order to minimize selection bias, they model both the determinants of the decisions by countries to enter the bond markets and the factors that influenced the pricing of these bonds when launched. For 1991–95, the level of the interest rate spreads was found to be

[15]See Eichengreen, Mussa, Dell'Ariccia, Detragiache, Milesi-Ferretti, and Tweedie (1998).

higher when the maturity of the bond increased, the country had a high ratio of external debt to GNP, the country had experienced a debt rescheduling, there was a high ratio of debt-service payments to exports, and the bond was a private placement.[16] In contrast, spreads were found to be significantly lower the higher a country's credit rating and the larger the size of the bond issue.[17] The authors also conclude that most of the change in spreads over 1996 and early 1997 was associated with changes in market sentiment rather than economic fundamentals.

Market Dynamics

While these empirical studies provide an indication of the degree to which capital flows and interest rate spreads are related to economic fundamentals as opposed to changes in market sentiment, they do not provide direct evidence on the factors that led to the changes in market sentiment. Some market participants explain the surge in capital flows and the apparent mispricing of risk as reflecting the interaction of a number of factors including (1) de facto and de jure liberalization of capital account restrictions in emerging markets; (2) significant improvements in economic fundamentals in many emerging markets and upgrades in sovereign credit ratings; (3) changes in global macroeconomic conditions; (4) a growing, albeit still limited, share of institutional portfolios held in emerging market assets; (5) the presence of at least some degree of herding among portfolio managers and bankers; and (6) moral hazard considerations associated with implicit or explicit guarantees that lead to an underpricing of the risks associated with emerging markets securities.

The scale of capital flows to emerging markets has been strongly influenced by the ongoing liberalization of capital account transactions in many emerging markets, as well as fundamental improvements in macroeconomic and structural policies. The liberalization of capital account transactions has been both de jure and de facto. For example, the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* has reported a declining incidence of restrictions on capital account transactions, multiple exchange rate practices, and compulsory surrender requirements for export receipts.[18]

Even with greater openness to external financial transactions, the inflows would not have taken place without significant improvements in the economic fundamentals in many emerging markets. This improvement in fundamentals is most pronounced for those heavily indebted emerging market countries that experienced debt-servicing difficulties in 1982. Fiscal deficits in these economies fell from an average of 6 percent of GDP in 1983–89 to 3 percent of GDP in 1990–95. Inflation also fell substantially from an average annual rate of 77 percent in 1979–89 to 19 percent in 1996. Similarly, export volumes of goods and services of this group of countries, which had grown at 6 percent a year during 1983–89, expanded at an annual rate of nearly 11 percent during 1990–96. This rapid expansion of exports allowed for a decline in the ratio of external debt-service payments to exports for countries with debt-servicing problems from 162 percent in 1990 to 128 percent in 1996, despite rapid growth in their external debt during the early 1990s. Moreover, the ratio of external debt to GDP fell from 54 percent in 1990 to 37 percent in 1996.

Changes in global macroeconomic conditions have also been an important determinant of capital flows to emerging markets. The decline in nominal interest rates in mature markets in the mid-1990s stimulated a search by many investors for new investments that would help preserve the overall yield on their portfolios. In order to achieve higher yields, these investors have shown a greater willingness to take on additional risks in both mature (junk bonds) and emerging markets.

Structural changes in international financial markets in the 1990s have influenced both the scale and composition of capital flows to emerging markets (see World Bank, 1997). The growing importance of portfolio flows (both bonds and equities) has reflected the expanding role of institutional investors and securitization. Institutions such as mutual funds, insurance companies, pension funds, and hedge funds have become increasingly important purchasers of emerging markets securities during the 1990s in order to improve the overall return on their portfolios and to achieve the benefits associated with a more diversified portfolio. These institutional investors have generally preferred to hold direct claims (bonds and equities) on emerging market entities, as opposed to indirect claims such as syndicated loans; and, as a result, there has been a growing securitization of capital flows to emerging markets.

Some observers have also argued that the initial capital flows to emerging markets created a "virtuous" circle. Under this hypothesis, capital flows to emerging markets in the early 1990s were stimulated by improved economic fundamentals in the recipient countries due to extensive structural reforms and more stable macroeconomic and financial policies. Following an extended period in the 1980s when access to

[16]The authors argued that a private placement was associated with a higher spread because investors demand compensation for the fact that disclosure requirements on private placements are much lower than for listed issues. A lower degree of liquidity for such placements could also be a factor.

[17]The lower spread associated with larger issuance size was seen as reflecting the existence of economies of scale in marketing and distribution and the greater liquidity of larger issues on the secondary market.

[18]See International Monetary Fund (1997a), Annex VI, and World Bank (1997).

global capital markets was limited, these initial, albeit relatively modest, capital flows improved the economic performance of emerging markets because they helped relax severe liquidity constraints and thereby facilitated increased domestic investment, which stimulated economic growth. This improved economic performance in turn led credit rating agencies to raise the ratings for a number of emerging markets. Many institutional investors are constrained to hold assets of at least some specified minimum credit quality, and the improved credit ratings thereby steadily expanded the set of institutional investors that could potentially hold emerging markets securities. Since institutional investors in mature market are estimated to hold some $20 trillion of assets, a decision by only a relatively limited number of institutional investors to modestly increase the share of emerging market securities in their overall portfolios (a stock decision) could by itself have stimulated relatively large portfolio flows to emerging markets. Indeed, net portfolio flows to emerging markets rose sharply from $17 billion in 1990 to over $106 billion in 1993.

Some observers have argued that this process was accelerated by herding among institutional investors. While herding is usually regarded as evidence of irrational behavior, some recent literature[19] suggests that herding can be explained if one or more of three effects are present: (1) payoff externalities such that the payoff to an agent adopting an action is positively related to the number of other agents adopting the same action; (2) principal-agent considerations such that a manager, in order to maintain or gain reputation when markets are imperfectly informed, may prefer either to "hide in the herd" to avoid evaluation or to "ride the herd" in order to improve reputation; or (3) information cascades where later agents, inferring information from the actions of prior agents, optimally decide to ignore their own information. It has been argued that all three of these elements played a role as institutional investors diversified their portfolios by adding emerging market securities and as regional and "second-tier" banks expanded their participation in syndicated lending organized by larger ("first-tier") banks. As the number of institutional investors willing to purchase emerging market securities increased, the size of individual issues could also be increased, which often implied a higher level of liquidity in the secondary markets for these securities. This improved liquidity would in turn further increase the attractiveness of emerging market securities to investors that had not yet entered this market. In addition, there were frequent reports that the willingness of some institutional investors to enter the markets increased because they did not want to be "left behind" in view of what was perceived as the return and risk diversification benefits associated with holding emerging market securities as a class of assets. Similarly, regional and second-tier banks, which often lack the resources to undertake in-depth analysis of macroeconomic and financial market conditions in a broad range of emerging markets, participated in syndicated lending to emerging markets organized by larger international banks because of a desire not to be left behind in what was regarded as a relatively profitable business and generally assumed that the larger banks had "done their homework" regarding the creditworthiness of the borrower.

Both the scale of capital flows and pricing of emerging market securities have also been viewed as influenced by moral hazard considerations. Specifically, the concern is that agents in private credit markets may be encouraged to undertake imprudent risks because of the expectations of official support in the event of a crisis, and borrowers facing artificially low interest rates may be lured into excessive indebtedness. Indeed, the major credit rating agencies regularly indicate as part of the ratings process the likelihood that a given bank will receive official assistance during a crisis.[20]

Dooley (1997) presents a model in which private investors acquire financial instruments that are considered likely to be protected by government insurance (that is, backed by the government's international reserves and possibly by credit lines). Domestic residents and foreign investors are viewed as having an incentive to engage in transactions that allow them to share the value of the government insurance. In his analysis, a speculative attack on the currency is generated by competition to avoid losses and will occur when the contingent liabilities of the government are just equal to the stock of reserve assets.

Similarly, Krugman (1998) argues that the governments of emerging markets allowed private individuals to open financial intermediaries that made risky investments, yet their creditors believed that there was an implicit government guarantee of the intermediaries' liabilities. As intermediaries invested in risky assets, there was asset price inflation that could be temporarily self-validating: because the prices of risky assets were raised above their appropriate level, the financial intermediaries acquired a false appearance of solvency, allowing them to continue operation. The sharp rise in asset prices in the Krugman analysis oc-

[19]See Devenow and Welch (1996) for a survey of this literature. It should be noted, however, that the "rationality" of these actions from the perspective of the individual agent does not necessarily lead to aggregate outcomes that are "desirable." See Agénor and Aizenman (1997); Bacchetta and van Wincoop (1998); Calvo and Reinhart (1996); and Eichengreen, Mathieson, Chadha, Jansen, Kodres, and Sharma (1998).

[20]For example, Fitch IBCA provides a "support rating" indicating whether a bank will receive government support should this be needed.

curs because intermediaries base their lending decisions on a Panglossian view of the world: they borrow and lend on the assumption that the best possible outcome will occur, and if that belief proves to be incorrect, the government will bail them out.

To date, there has been no direct empirical test of how important herding and/or moral hazard problems were in stimulating the surge of capital flows and the sharp decline in interest rate spreads. However, it is evident that the surges in capital flows to emerging markets and the sharp improvements in the terms and conditions under which these countries could access international financial markets are not isolated events. The mid-1990s witnessed a compression of interest rates spreads for borrowers from a broad range of credit risks in both mature and emerging markets (International Monetary Fund, 1997a). Moreover, as noted in the 1997 Capital Markets report (International Monetary Fund, 1997a, Appendix VI), surges in capital flows were a feature of earlier periods of high capital mobility in the late 1800s and the 1920s when presumably moral hazard considerations were of much less significance.

Abrupt Loss of Market Access

Recent surges of capital flows to emerging markets have ended with an abrupt loss of market access and sharp adjustments in the prices of claims on these countries. If financial markets operated smoothly and efficiently, one would expect that, as a country's fundamentals gradually deteriorated over time, there would be a gradual increase in the risk premium implicit in the cost of borrowing in international markets. Presumably, a complete loss of market access would occur only if the country failed to respond to market signals or if its economic fundamentals underwent a sudden deterioration.

The abrupt reversal of investor confidence that underlies a sudden loss of market access and sharp adjustment in asset prices is not unique to the relationship between emerging markets and global financial markets. Indeed, the United States experienced such a sudden change in investor sentiment that led to a decline in equity prices of more than 20 percent on October 19, 1987. As Greenspan (1998a) has noted, there is no credible scenario that can really explain so abrupt a change in long-term valuations on that one day. More generally, both casual observation and academic research suggest that some aspects of the behavior of asset prices, especially the dynamics of large price changes, cannot be fully explained by rational pricing models (see Annex II).

In examining emerging market crises, recent analyses have tended to focus both on the factors that leave countries vulnerable to a loss of market access and those that affect the timing of the speculative attack that often signals the loss of market access. In considering the recent Asian experience, it has been argued that the key factors that left Asian countries vulnerable to a shift in market sentiment were (1) exceptionally high leverage (as measured by the ratio of debt to equity in corporate entities), which was a symptom of excessive risk taking; (2) banking systems that were undercapitalized, had lax lending standards, and were subject to weak supervision and regulation; (3) a reliance on short-term cross-border interbank funding; (4) moral hazard considerations created by the official safety net underpinning the financial system that encouraged excessive risk taking and blurred the distinction between public and private sector liabilities; (5) weak central banks that were subject to excessive political interference; and (6) excessive reliance on banks as the primary source of financial intermediation.[21] As a result of these factors, countries were vulnerable to the emergence of a vicious circle in which an external or domestic shock could abruptly trigger a revision of expectations of future performance, which in turn could quickly be transformed into a sharp contraction of financial and product markets.[22]

Even if a country is vulnerable to an abrupt loss of market access, there is still the issue of the exact timing of the crisis. For countries with pegged or managed exchange rate arrangements, the loss of market access is typically signaled by a speculative attack on its exchange rate.[23] Recent theoretical analyses of speculative attacks have reached differing conclusions about the predictability of such attacks.[24] In the so-called first generation models, a speculative attack is an attempt by market participants to profit through the money market from the dismantling of inconsistent policies. Budget deficits financed by money creation were assumed to fuel balance of payments deficits, until the authorities' remaining foreign assets were depleted in a final instantaneous attack.

While such first generation models were viewed as successful in explaining developments in countries such as Argentina in 1981 and Mexico in 1982, they had difficulties accounting for some key aspects of recent crises and hence led to the development of the "second generation" models. In particular, it was evident during the ERM crisis of 1992 that the policies of some authorities were not overly expansionary and need not have caused a crisis. Thus, in second generation models, government reactions to private sector expectations became the important element in trigger-

[21]See, for example, George (1998), Greenspan (1998b), and Perry and Lederman (1998).

[22]See also Macfarlane (1998).

[23]Regardless of the nature of a country's exchange rate arrangements, the loss of market access would also encompass a withdrawal of short-term lines of credit and sharp declines in equity, bond, and other asset prices.

[24]For more detailed reviews of the structure of these models, as well as their empirical relevance, see Flood and Marion (1997) and International Monetary Fund (1997a and 1998).

ing a crisis. For example, a government may be willing to maintain a fixed exchange rate in the absence of a speculative attack; at the same time, it may not be willing to incur the costs associated with the high interest rates (because of high unemployment or a fragile banking system) that would be needed to defend an exchange rate commitment. As a result, whereas in first generation models speculators simply anticipated the abandonment of the currency "peg" made inevitable by inconsistent fundamentals, they actually can provoke the change in fundamentals that make their speculative attack profitable in second generation models. An important implication of these models is that it may be impossible to predict exchange rate crises.

As noted earlier, the Asian experience has given rise to what can be viewed as "third generation" models (Krugman, 1998) or a resurrection of first generation models with new fundamentals (Dooley, 1997), namely moral hazard considerations that initially bring on excessive risk taking and subsequently financial collapse. In these analyses, the timing of the crisis (the "insurance attack") is fully explained, and it occurs when the external resources that the government can mobilize (both foreign exchange reserves and official credits it can obtain in times of crisis) just match its outstanding contingent liabilities associated with the provision of the official safety net under the financial system.

While the theoretical literature is informative about when speculative attacks are likely to occur, they are still highly stylized and do not translate into simple empirically useful predictive rules. The growing body of empirical literature that attempts to identify leading indicators of currency crises has, as yet, met with limited success, and the jury is still out on whether a stable set of relationships can be found that will be useful in this regard (see Annex III).

Contagion

Another key feature of the crises since the 1980s has been the existence of contagion or spillover effects. While these terms have been widely used in the wake of the Mexican and Asian crises, observers have come to different conclusions as to whether the observed contagion effects are evidence of irrational investor behavior or more conventional fundamental causes.

While correlations between stock market and currency returns across some of the emerging markets were high during the Mexican and Asian crises, the existence of high correlations does not necessarily imply irrational spillovers. For example, asset prices should depend on expectations of future cash flows and the way in which those expected cash flows are discounted, which reflects perceptions about the level and price of risk: if expected cash flows and risk assessments are correlated based on correlated fundamental factors, then asset prices and returns will also be correlated. The identification of fundamental factors is, however, not straightforward: for example, one study (Wolf, 1997) that attempts to disentangle stock market correlations, industry effects, and fundamental macroeconomic factors concludes that it is difficult to find compelling evidence for irrational contagion effects. Other studies (for example, Eichengreen, Rose, and Wyplosz, 1996), however, have shown that while certain macroeconomic factors help explain which countries experience currency crises, there remains an unexplained correlation in the timing of crises: that is, currency crises are somewhat contagious.

Three channels have recently been proposed as explaining the observed correlations between crises in emerging markets. Eichengreen, Rose, and Wyplosz (1996), Glick and Rose (1998), and Goldstein (1998) focus on the importance of trade flows and competitiveness effects as contributing to contagion. In particular, when a depreciation occurs in one country, countries that trade most with that country or are direct competitors in third markets will suffer the largest deterioration of competitiveness, which in turn makes their currencies more susceptible to speculative attacks.[25]

A second channel of contagion has been referred to as the "wake-up call" phenomenon (Goldstein, 1998). This hypothesis implies that if one country (for example, Thailand) has difficulties, then such an event leads investors to reassess their view of other countries. If investors find the same weaknesses in the other countries—including the type of deep-seated structural weaknesses that cannot generally be measured and included in econometric tests—their credit ratings are reduced and the crisis spreads.

Financial linkages between countries constitute a third channel for spillover effects. As noted in the first section, in the lead-up to the problems in Korea, Korean banks accumulated substantial amounts of high-yielding Brazilian and Russian government debt in an attempt to maintain their profitability. At the same time, there was also substantial Brazilian investment in Russian debt. When Korean banks encountered severe liquidity problems they began to sell off their Brazilian and Russian assets, leading to falls in asset prices in these countries and knock-on sales of Russian debt by Brazilian investors: in some cases these sales were forced by margin calls on leveraged positions due to the general fall in asset

[25]While Eichengreen, Rose, and Wyplosz (1996) show that competitiveness effects were important determinants of contagion in the 1959–93 period, and Goldstein (1998) argues that Asian trade patterns show sufficiently large direct and third-country effects to justify sequential devaluations, Bhattacharya and others (1998) have argued that the Asian trade patterns cannot fully explain the observed pattern and size of depreciations.

prices in emerging markets. Thus, it is possible—if markets are insufficiently deep that sales by one group of investors can lead to price changes—that the pattern of financial holdings can lead to shocks in one country being propagated into other countries, regardless of fundamentals.

Some degree of contagion from these channels may be inevitable at times of crisis, and it may be exacerbated by the type of herding behavior discussed above, especially if the previous inflows occurred without due regard to fundamentals. The extent of the outflows from a country may also be exacerbated by a lack of information. In periods of financial stress, market participants must make rapid decisions whether to maintain or adjust their portfolio positions on the basis of existing information. It is evident that when due to a lack of adequate information, portfolio managers cannot effectively distinguish between the financial positions of different borrowers, there is a tendency in times of market stress to "assume the worst" and to rapidly adjust portfolio positions on borrowers that are regarded as being in "similar" conditions.

Coping with Surges in Capital Inflows

If surges in capital flows to emerging markets are likely to be a feature of the increasingly integrated global financial markets, it becomes important to consider how the macroeconomic and financial risks created by large-scale and potentially volatile capital flows can best be managed. Indeed, this issue has been a focus of policy discussions at the IMF since the early 1990s. This section reviews some of the options available to policymakers in areas of macroeconomic policy, financial sector regulation and supervision, and structural and institutional arrangements, with reference both to the main conclusions reached at the time of the Mexican crisis and to new issues that have arisen in the context of the Asian crises. While sound macroeconomic policies have been recognized as key elements in managing the risks created by volatile capital flows, there has been a growing emphasis on the need to also strengthen institutional arrangements, particularly in the financial sector, in order to cope with surges in capital flows.

Macroeconomic Policy Responses

Most emerging markets that experienced heavy capital inflows during the early and mid-1990s took measures to limit the impact of these inflows on their economies.[26] One general approach was simply to allow the exchange rate to respond to the pressures created by the capital inflows, either through a revaluation or an appreciation of the exchange rate. However, for those countries with fixed or managed exchange rate arrangements, the initial policy response to large-scale capital inflows typically involved the use of intervention in order to reduce pressure on the nominal exchange rate and sterilization to avoid the monetary expansion that exchange market intervention can create.

An examination of the effectiveness of sterilization policies in managing capital inflows suggests that sterilized intervention may not be very effective on a sustained basis and may potentially create new problems in terms of the economy's adjustment to large-scale capital inflows.[27] One reason is that despite substantial exchange market intervention, the authorities have often been unable to eliminate all the pressure in the foreign exchange market. More important, short-term interest rates tend to increase when sterilization efforts begin thus encouraging more inflows. Further, the potential fiscal costs of sterilized foreign exchange intervention, besides being burdensome in themselves, can encourage inappropriate policy responses to reduce such costs, including restrictions on financial markets.

Given this conclusion regarding the effectiveness of sterilized intervention, it can be argued that there are advantages to allowing the nominal exchange rate to appreciate when there are large-scale capital inflows. In particular, an appreciation helps insulate the domestic money supply from the expansionary effects of capital inflows, so that if economic fundamentals warrant a real exchange rate appreciation, the adjustment can come via the exchange rate rather than via higher inflation. Also, rather than simply revaluing the exchange rate in response to capital inflows, there are several advantages to allowing the exchange rate to fluctuate freely. One key advantage is that exchange rate flexibility introduces uncertainty that discourages some short-term flows, especially of a speculative nature. However, an important disadvantage of exchange rate flexibility is that a heavy capital inflow could induce an abrupt and large real exchange rate appreciation that could impose substantial adjustment costs on the economy. Moreover, when hedging instruments are not available, exchange rate flexibility may also deter medium-term capital flows, such as foreign direct investment, in addition to deterring export growth.

Another response to large-scale capital inflows may be a tightening of fiscal policy so as to reduce the upward pressure on aggregate demand and limit the inflationary impact of the inflows.

The experience with large-scale capital inflows and the sharp reversal of these flows has led to a reexami-

[26]For further discussions of macroeconomic policy responses, see International Monetary Fund (1995a) and Haque, Mathieson, and Sharma (1997).

[27]International Monetary Fund (1995a).

nation of the use of capital controls. While capital controls were traditionally used as a vehicle for limiting capital outflows from emerging markets, the emphasis more recently has been on the use of controls to manage inflows by altering either the cost or scale of certain types of cross-border transactions. One key issue is whether it is feasible to design capital controls that effectively distinguish between short-term and long-term capital flows. In part, this reflects the fact that the standard balance of payments classifications of direct investment, portfolio flows, and other types of flows are generally not indicative of the volatility, maturity, and liquidity of the flows.[28] Moreover, even if a set of controls is effective in limiting some set of "short-term" capital flows, domestic and foreign investors may begin to use "long-term" instruments (such as equities and long-term bonds) to effectively take short-term positions.

The inability to distinguish between short-term and long-term capital flows has led some countries to tax gross capital inflows in a form designed to have the burden fall most heavily on short-term inflows. Examples of this type of tax—involving a nonremunerated deposit at the central bank on foreign currency borrowing—were adopted by Chile in 1991 and by Colombia in 1993 (see Annex IV for a more detailed discussion). Since the taxes implicit in these deposit requirements fall more heavily on investors with relatively short investment horizons, they were clearly designed to discourage speculative "hot money" capital inflows. The main disadvantage of these measures has been that flows have been rerouted through other channels.

As an alternative to taxes on capital inflows, countries may also consider the use of prudential regulations and other quantitative limits on cross-border transactions. Prudential measures that have been used include limits on non-trade-related swap activities, offshore borrowing, and banks' net open foreign exchange positions (as used in Indonesia, Malaysia, the Philippines, and Thailand); caps on banks' foreign currency liabilities (Mexico); and measures that prohibit domestic residents from selling short-term money market instruments to foreigners (Malaysia). All of these prudential measures are means of limiting the role of the banking system in intermediating capital inflows, especially when there are existing financial system weaknesses and concerns about banks' ability to monitor and evaluate the risks associated with their loan portfolios.

The experiences of selected countries with policies designed to curb short-term capital inflows were reviewed in the wake of the Mexican crisis,[29] and two main conclusions were suggested by the available evidence. First, at least in the short term, such policies appear to be successful in reducing the volume of inflows. However, the longer the policies remain in place, the more likely it is that the controls would be less binding and potentially harmful to the financial system. Second, these policies appear also to have contributed to the desired transformation in the nature or maturity of inflows.

Dealing with Banking Sector Problems

A key implication of the Asian crises is that generally sound management of fiscal and monetary policies provides no guarantee against major economic crises, even if implemented over an extended period.[30] The large-scale capital inflows initially attracted by prudent fiscal policies and high private savings ratios can contribute to overinvestment and a buildup of overheating pressures that will be reflected in large external imbalances and sharp increases in property and stock prices. Moreover, the commitment to pegged exchange rates for lengthy periods can encourage the financial and corporate sectors to take on unhedged external liabilities, often of short maturities. In addition, the ability of the banking system to efficiently intermediate the capital inflows and appropriately price credit risks can be hampered by weak managerial systems, lax prudential supervision, and related-party and government-directed lending.

Indeed, it is apparent that banking system weaknesses were at the heart of the Asian crises. A number of factors created a situation where a weak banking system converted an initial moderate disturbance—arising either within the financial system or elsewhere—into an implosive crisis (Greenspan, 1998b). First, when confronted with an upward-sloping yield curve, banks incurred both interest rate and liquidity risk by funding medium-term lending with short-term funds. This type of funding left banks—particularly those with weak capital positions—exposed to a collapse of confidence if interest rates rose sharply. Furthermore, an equivalent exchange rate risk existed where fixed exchange rates and high domestic interest rates prompted banks to undertake substantial unhedged foreign borrowing. Second, when banks were the major source of financial intermediation, their breakdown necessarily had large effects on real activity. Third, moral hazard also played a role in causing crises since interest rate and currency risk taking, excess leverage, weak capital positions, and excessive access to international interbank funding were all encouraged by the perception that the authorities would come to the rescue of failing institutions.

[28]Claessens, Dooley, and Warner (1995) argue that the volatility of the various types of portfolio flows and foreign direct investment are not statistically different.

[29]International Monetary Fund (1995a).

[30]International Monetary Fund (1998), pp. 10–11.

In considering policies toward the banking system, there is a distinction between policies followed during "normal" periods and those employed during systemic crises. During normal periods, a key objective is to adopt broad principles and practices that encourage prudent behavior and deal with emerging difficulties in individual banks expeditiously. As a general rule, this will entail requiring banks to promptly recognize the losses associated with nonperforming loans in their balance sheets and income statements. Banks whose capital positions have eroded should be required to be recapitalized or closed. When banks are closed in normal periods, it is important to avoid blanket official guarantees of the claims of all creditors and depositors, and the banks' shareholders must be the first to bear the cost of any bank failure. To ensure an orderly closure of banks, there also needs to be well-functioning bankruptcy procedures.

Systemic banking crises are quite different and require official intervention both to protect the payments system and to avoid significant adverse effects on real economic activity. In this situation, it is unlikely to be desirable to close all troubled institutions and still maintain a functioning payments system. Moreover, no bankruptcy system would be able to cope expeditiously with a situation where most financial institutions were or were nearly insolvent. However, it may still be possible during a systemic crisis to close some of the most troubled institutions, with corresponding losses imposed on their owners, and to provide assistance to other institutions in such a way as to reduce moral hazard (for example, at penalty interest rates). Nonetheless, it is likely to be the case that some imprudent institutions will be assisted.

A related source of concern is that foreign bank creditors may be shielded by international financial support packages from bearing their proper share of losses in an economic crisis. Insofar as international assistance helps to avoid an unnecessarily damaging crisis, foreign creditors, as well as other economic agents, participate in the benefits. However, this is not an undesirable outcome, since the purpose of international support is to help avoid unwarranted economic damage. Moreover, there is no reason why an appropriately designed international support package should, by itself, involve a "bailout" of foreign creditors. Inappropriate bailouts of foreign creditors can, however, occur—at the expense of domestic taxpayers—when national governments provide unwarranted support for domestic financial institutions or their creditors. In this regard, the key objective is to avoid the socialization of private risk by providing unwarranted public support, and this must be a key element in the conditionality associated with international support packages.

A number of broad principles and practices for moving towards a stable and sound banking system in normal periods have been identified in the Basle Committee's *Core Principles for Effective Banking Supervision* and the IMF's *Toward a Framework for Financial Stability*.[31] The first line of defense against unsound banking is competent management, which is primarily the responsibility of the banks' shareholders and executive boards, although licencing procedures and "fit and proper" rules can be of assistance. Another important element is the existence of timely and reliable information for use by management, supervisors, and market participants. Such disclosure can be promoted by the introduction of internationally recognized accounting standards that are complemented by proper procedures and practices for their effective implementation.

If market discipline is to play a role in maintaining a sound banking system, then there must be a presumption that troubled banks will not be assisted automatically and that owners and large creditors will not be fully protected. Central bank lender-of-last-resort facilities should provide only temporary support for illiquid but solvent institutions, typically at a penalty rate and against collateral. Deposit insurance systems need to be well funded so that they can pay off insured depositors quickly and allow for prompt closure of insolvent institutions. Moreover, a credible exit policy for problem banks is necessary for effective deposit insurance and lender-of-last-resort arrangements.

Well-designed banking legislation and prudential regulations have a number of functions. They provide for a licensing process that ensures that a prospective banking institution has suitably qualified owners, and is likely to be professionally managed and potentially profitable. Capital adequacy ratios should ensure that banks maintain a minimum amount of capital to absorb unanticipated losses and that managers and owners have an incentive to operate banks safely. Limits on risk taking take different forms but should restrict exposures to a single borrower or connected group of borrowers, to various sectors of the economy, and to market risk. Prudential liquidity ratios can also be used to ensure that banks can meet their creditor and depositor obligations without having to resort to forced sales of assets.

For prudential regulations to have the desired effect, supervisory authorities must have sufficient autonomy, authority, and capacity. Since supervisory actions are often politically unpopular, supervisors must be able to act against banks without undue delays or political pressures. Moreover, supervisory agencies cover a range of increasingly sophisticated bank activities, and therefore need the resources to attract and retain employees of high caliber and to provide them with the necessary training, support, and remunera-

[31]Basle Committee on Banking Supervision (1997) and Folkerts-Landau and Lindgren (1998), respectively.

tion. In addition, supervisors must have the ability to conduct ongoing on- and off-site monitoring of banks. There is also a clear need to coordinate the supervision of foreign branches and subsidiaries with other national supervisory agencies.[32]

It is also apparent from the recent crises that the combination of a weak banking system and an open capital account is "an accident waiting to happen." One particular area of concern is the use and possible withdrawal of cross-border interbank funding, which has been described as the "Achilles' heel" of the international financial system (Greenspan, 1998b). Financial sector weaknesses in individual emerging markets take on a global dimension when moral hazard interacts with cross-border interbank funding. If creditor banks come to expect that claims on banks in emerging markets will be protected by an official safety net, they will treat these claims as essentially sovereign claims. Indeed, the recent official guarantees of cross-border interbank claims by Indonesia, Korea, and Thailand may have reinforced this expectation. To the extent that such expectations exist, it would increase the level of cross-border bank lending above the level that would be supported by unsubsidized markets themselves.

To offset such resource misallocation, Greenspan (1998b) has raised the question of what steps could be taken to impose some additional discipline on the interbank market. While removing the official safety net and allowing the creditor banks to incur losses would be one possibility, it would very likely confront emerging markets with an abrupt loss of access to international markets in a time of crisis. This suggests that additional discipline could be imposed via a combination of measures involving debtor and creditor banks. For example, capital requirements could be raised on borrowing banks by making the required level of capital dependent not just on the nature of the banks' assets but also on the nature of their funding. Alternatively, banks could be charged a fee for the existence of the official guarantee via either an explicit premium or through a reserve requirement on interbank liabilities that would earn a low or zero interest rate. Increased capital charges on lending banks would be another possibility. Under current Basle capital adequacy guidelines, short-term claims on banks carry only a 20 percent risk weight. Increasing this risk weight would increase the cost of interbank borrowing and induce banks to reduce their total borrowing or to utilize nonbank sources of funding. However, such a change in risk weights would be most effective if they induced creditor banks to strengthen their internal risk management systems and debtor banks to improve their liquidity management.

[32]Best practices in this area are discussed in Chapter VIII of Folkerts-Landau and Lindgren (1998).

The role of fixed or managed exchange rates in recent crises suggests another change to the prudential and supervisory system, namely that financial regulation should be tailored to exchange rate arrangements. For example, countries with limited capacity for lender-of-last-resort operations—say due to their currency board or other fixed exchange rate system[33]—may want to hold the banks to exceptionally high prudential standards in order to minimize the need for last-resort lending. They may wish to mandate higher reserve, capital, and liquidity requirements than other countries. Argentina is a case in point. Following the Tequila shock of 1994–95, the government announced a mandatory program of privately financed deposit insurance to reduce the risk of bank runs due to the contagious loss of depositor confidence. More or less simultaneously it adopted a 15 percent across-the-board liquidity requirement for all deposits of less than 90 days, and also imposed risk-adjusted capital asset requirements substantially higher than the Basle standards. While this led to a drop in bank lending, it also reduced the need for lender-of-last-resort intervention (Caprio and others, 1996). Self-financed deposit insurance and exceptional liquidity and capital requirements may have reduced the international competitiveness of the banking system, but it can be argued that this was a necessary policy for a country whose entire economic policy strategy was organized around a currency board peg.[34]

While the implementation of an effective prudential and supervisory framework—as discussed, for example, in the Basle Committee's *Core Principles for Effective Banking Supervision* and the IMF's *Toward a Framework for Financial Stability*—could potentially overcome almost all of the problems observed in weak banking systems, the initial implementation of such a framework is easier said than done. Political pressure for regulatory forbearance is intense. The expertise required to evaluate bank balance sheets is in short supply, nowhere more so than in emerging markets. The problem grows more intense as banks branch into new lines of business and with the proliferation of exotic, thinly traded financial instruments.

In these circumstances, supervisory authorities may be tempted to implement temporary measures. One alternative is to rely on simple rules—for example, limiting banks' foreign currency exposures as a way of containing risk. Unfortunately, simple rules can have complex consequences, and unintended ones. As

[33]To be sure, countries can take steps to relax this constraint: for example, Argentina while operating a currency board has negotiated commercial lines of credit with a syndicate of international banks to be drawn on in periods when the authorities need additional resources, and Mexico has also negotiated a credit line.

[34]In addition, a number of authors (especially Sachs, 1994) have argued that developing countries, facing volatile macroeconomic and financial environments, should hold their banks to higher prudential standards than required by the Basle Accords.

Thailand's experience illustrates, restricting the open foreign exchange positions of banks, for example, may simply cause the latter to pass on that exposure to their domestic customers (who are even less able to handle it) in the form of foreign-currency-denominated loans.[35] Similarly, the imposition of capital requirements that are higher than the Basle standards will be a deterrent to excessive risk taking only if bank capital is properly measured and promptly written down, and if banks are allowed to fail.

These dilemmas have motivated the search by some observers for additional options for enhancing the stability of the banking sector. One of the more radical options is narrow banking, under which banks, or at least insured banks, are permitted to invest only in liquid assets such as deposits with other banks and in interest-bearing assets like short-term government securities (see, for example, Litan (1987) and Burnham (1990)). Since the demand for other banking services would not disappear, firms and individuals would obtain loans from (or sell securities to) uninsured institutions like finance companies and the new nonbank institutions that would attract some of the funds that were previously deposited in banks. Of course, these new institutions would have an incentive to offer deposit-like liabilities, and many existing risks to the banking system would simply shift to other organizations, which might themselves have a tendency to affiliate with narrow banks (through, inter alia, holding companies). The question would then become whether the authorities' commitment not to apply too-big-to-fail arguments to these entities would be politically sustainable ex post. Insofar as financial distress in these entities gave rise to bank-like externality problems, this might not be the case. The hope of narrow-banking proponents is that the authorities could head off threats to systemic stability by undertaking lender-of-last-resort operations (following sound central bank practice, lending only at penalty rates against acceptable collateral), but not necessarily compensating investors for their losses, enhancing the incentive for the latter to exert market discipline against unsound lending practices. But in a sense, the proponents of narrow banking are simply assuming an answer to the central question; were it so simple for governments to limit their support operations in this way, they could equally well limit its extension to existing financial institutions, obviating the need to create narrow banks.

A second option is to have greater international participation in the banking system of emerging countries. A banking system with an internationally diversified asset base is less likely be destabilized by adverse domestic conditions and in turn to worsen them into crises. Domestic branches of foreign banks effectively possess their own private lenders of last resort in the form of the foreign head office, and the latter has potential access to last-resort lending by the central bank of the country in which the home office resides, typically one of the mature markets. And where competent management is in short supply, allowing entry by foreign banks can be a means of importing expertise.[36] In practice, however, greater foreign participation may encounter domestic political resistance. In addition, because their operations have given them proprietary information, domestic banks have an advantage when seeking to defend their market share. And however invigorating the chill winds of international competition, abruptly opening domestic banking to foreign competition can be a sharp shock to previously sheltered financial institutions. In the absence of an orderly exit policy, it may encourage gambling for redemption and other perverse short-run responses. This suggests that there may be a limit to the pace at which banking markets can or should be internationalized.

A final option is to place temporary taxes or quantitative limits on the short-term foreign currency borrowing of banks to counter the moral hazard that leads to loans from nonresidents to poorly managed banks. However, limits on the ability of banks to borrow abroad will simply encourage nonbanks to borrow abroad. Much of these borrowing may then find its way back into the banking system, and the vulnerabilities to which the financial system was subject may be essentially unchanged. The logical consequence of starting down this road is therefore a tax or tax equivalent on all foreign capital inflows, not merely on foreign inflows into the banking system. If it was intended to target short-term capital inflows, it could be structured as a holding period tax, for example like the Chilean measure that requires all nonequity foreign investment to be accompanied by a one-year, noninterest-bearing deposit (whose tax equivalent therefore declines with the duration of the investment). However, in light of the cost of such taxes and their declining effectiveness, such measures should be regarded as temporary ones, designed to operate only as long as it takes to improve the domestic prudential and supervisory framework.

The Role of the Corporate Sector and the Bankruptcy Process

A new issue raised by the developments in Asia is the effect of large unhedged foreign currency liabilities of the nonfinancial corporate sector. In some countries (such as Korea) this has reflected the on-

[35]One response to the latter problem—as has been implemented in the Czech Republic—may be to impose automatic provisioning requirements on foreign currency loans to borrowers who are not (naturally or financially) hedged against exchange rate risk.

[36]As Gavin and Hausmann (1997, p. 135) put it, "Such banks bring with them accounting practices, disclosure standards and risk management practices shaped by the requirements of the world's most demanding supervisors and private investors."

lending of external funds raised by domestic banks. In others (such as Indonesia and Thailand) it has reflected direct access by large firms to the Eurobond market and international syndicated lending. In part, this buildup of foreign currency liabilities in the nonfinancial corporate sector in the 1990s appears to have been related to the desire of international investors to acquire claims on what were regarded as the most rapidly growing and profitable firms in countries with sound fundamentals. In addition, in those countries that used pegged or managed exchange rates supported by relatively tight domestic monetary conditions, domestic nominal interest rates were often higher than comparable interest rates in global markets. These large interest rate differentials created a strong incentive for external borrowing, especially when firms regarded the authorities' ability to sustain their exchange rate arrangements as credible. In a world where corporate entities increasingly have access to global financial markets, this situation may reflect one of the dilemmas involved in using a nominal exchange rate anchor—namely, the authorities may have difficulties simultaneously convincing the corporate sector that it should base its wage and price decisions on the assumption that the nominal exchange rate will be maintained over time but that it should also hedge its external liabilities just in case the authorities cannot maintain their exchange rate commitment.

The unhedged positions of corporates also reflected either the absence or limited availability of hedging instruments in the various Asian currencies, as well as their misuse. The limited development of currency derivative markets in Asian emerging markets, as in other regions, has partly reflected official concerns that currency futures and options could be a vehicle for taking speculative positions and could increase exchange rate volatility.[37] Nonetheless, even if derivatives markets are encouraged and develop, the experience in mature markets suggests that it may take considerable time before medium-term hedging products arise and that in the early stages of development such hedging operations can be quite costly.

Even when derivative products are available, the recent Asian experience demonstrates that corporates may actually use options and swaps to take speculative positions betting that the authorities will be able to maintain the existing exchange rate arrangements (see Chapter II). As long as the authorities did maintain their exchange rate arrangements, the income earned on these derivative products effectively further reduced the cost of external borrowing. However, the need of corporates to cover these open positions by acquiring foreign exchange was a key factor determining the intensity of the speculative attacks against a number of the Asian currencies, including the Thai baht and the Indonesian rupiah.

While changes in macroeconomic policies, including the introduction of greater exchange rate flexibility, may help to reduce the incentives for corporates to take unhedged foreign debt positions, these would also need to be supplemented by changes in legal arrangements involving corporate governance, disclosure requirements, and bankruptcy procedures. The objective of these changes would be to increase the amount of information made available to shareholders, creditors, and other market participants so as to increase market discipline on corporate managers and thereby increase the incentives for better management of the risks associated with using foreign funds. For those managers that fail to properly manage these risks, improved bankruptcy procedures and laws would facilitate the restructuring or closure of poorly managed firms.

Unfortunately, many of these structural reforms may take a considerable period of time to put in place. The absence of these institutional arrangements may be particularly important in countries that have a history of public assistance for large corporates in times of crisis. Such an official safety net, even if less comprehensive than that underpinning the financial system, can affect risk-taking behavior in general and can increase the willingness of corporates to use an excessive amount of debt, both domestic and foreign. In this situation, the authorities may need to take steps to increase the cost of using external debt by corporates (while the excessive use of domestic debt could be addressed through prudential measures in the domestic financial system). As discussed above, this could be accomplished through the use of taxes such as Chilean-like reserve requirements on all external borrowing.

Another lesson of the Asian crisis is the importance of an efficient bankruptcy code. Efficient bankruptcy codes include a number of features. They allow the imposition of a standstill to prevent creditors from racing to grab the enterprise's remaining assets and management from engaging in asset stripping: halting the creditor grab race averts the danger of premature liquidation. They are also supported by the existence of accepted accounting and auditing standards that enable creditors to assess the value of remaining assets and courts to establish the priority of claims.[38] Procedures in some countries are not restricted to the liqui-

[37]Jochum and Kodres (1998) have studied the introduction of exchange-traded futures contracts for three emerging market currencies and have shown that the introduction of futures contracts either served to reduce the volatility of the spot exchange rate (the Mexican peso) or did not significantly influence its volatility (the Brazilian real and the Hungarian forint).

[38]For example, under Chapter 11 of the U.S. bankruptcy code, a proposed plan of reorganization cannot be voted upon by creditors until they also receive a court-approved disclosure statement that contains detailed financial information.

dation of firms entering bankruptcy, but provide for the reorganization of a firm, so long as its terms are approved by a majority of creditors.

In practice, many countries lack bankruptcy codes with the desirable features. In countries lacking efficient bankruptcy procedures—the newly industrialized countries of East Asia prior to the recent crisis being widely cited examples—serious inefficiencies can result. Where the system of property registration is inefficient, it may be difficult to ascertain title to property and to seize assets. Where accounting and auditing standards are low, it may even be difficult to determine if bond covenants have been breached. La Porta and López-de-Silanes (1998) show that countries with poorly developed bankruptcy procedures, lax accounting and auditing standards, and unreliable law enforcement (unreliable enforcement of creditor rights in particular) have smaller financial markets, that firms in such countries rely less on external finance, and that the composition of activity is biased against capital-intensive sectors. In addition, firms' dependence on internal finance in such countries may increase the cyclical sensitivity of investment and amplify the business cycle.

The lack of an efficient bankruptcy procedure can compound the effects of other financial problems. When conditions sour—because, for example, a financial crisis in a neighboring country results in competitive devaluation, or because of a regional economic slowdown—creditors anticipating that the firms to which they have lent will experience financial distress and lacking confidence that they will be treated fairly under the country's insolvency code will scramble to liquidate their claims, aggravating the "grab-race" problem. Thus, the effects of the exogenous shock will be further aggravated by the consequent loss of investor confidence. And when borrowers default, the inability of lenders to repossess collateral may produce a cascade effect where the debtor's nonperformance forces its creditors' into default. When the creditors include banks, the worst case scenario is a financial panic. La Porta and López-de-Silanes (1998) suggest that these effects may not be apparent during periods of rapid growth, when few firms experience financial distress, but will surface if and when growth slows. Asia's recent experience is consistent with this conjecture.

The solution to at least some of these problems is to provide for effective enforcement and implementation of existing bankruptcy statutes and other laws pertaining to creditor rights. The goal should be to enhance transparency, to strengthen creditor rights in systems where debtors are able to delay the proceedings, and to permit reorganization as well as liquidation in cases where only the latter is provided for by the law.

It is recognized that international harmonization is extremely difficult because of differences in legal systems and traditions. Whatever system is adopted, it is agreed that enforcement needs to be consistent and predictable. Similarly, countries need to strengthen auditing and accounting requirements so that creditors and the courts can more accurately evaluate the current condition and future prospects of the financially distressed concern.[39] Finally, the independence of the judiciary needs to be strengthened so that it is better insulated from capture by the special interests involved.

Conclusions

As is the case with most crises, the current financial crisis in Asia surprised virtually all observers. It shared other common factors with previous crises, including a prior surge in capital inflows and improvements in the terms of access to international markets; the existence of large unhedged exposures of domestic borrowers to currency and interest rate movements; weak regulatory regimes and a lack of transparency in the operation of financial systems; and substantial spillover effects to other markets. However, there were also some differences relative to earlier crises, most notably that the Asian crisis has been a "structural crisis" that occurred in a relatively benign external environment and in debtor countries with by and large strong macroeconomic fundamentals. Further, it highlighted the vulnerabilities that could arise through cross-border claims among private parties and showed that, given the large number of parties involved, coordinating the resolution process and restructuring such claims can be extremely difficult.

The reasons for the surges in capital flows that sometimes end in crises are not entirely clear. Some market participants have argued that surges may be the result of virtuous circles that begin with financial and external liberalizations that lead to capital inflows, followed by an improvement in economic fundamentals and credit ratings, and then, in turn, more inflows. Such surges are, however, more likely to end badly if there is substantial herding by bankers and portfolio managers who follow each other and invest in emerging market countries without due regard to the structural weaknesses of the financial systems, or if there are moral hazard problems that lead to an underpricing of the risks associated with investing in emerging markets.

There appear to be a number of factors in Asia that exacerbated what were initially seen as moderate asset

[39]In the case of accounting, for example, there is already the International Accounting Standards Committee, consisting of representatives of the accounting profession from 91 countries, which promulgates international accounting standards. There is also the International Federation of Accountants, with parallel membership, which has gone some way toward formulating international auditing standards.

price declines and capital outflows into full-blown crises. These include exceptionally high leverage in the corporate sector; excessive reliance on banks as the primary source of financial intermediation; undercapitalized banking systems; large unhedged exposures; and excessive reliance on short-term cross-border interbank funding. All these factors contributed to financial fragility, as did the poor state of the financial infrastructure—the legal and accounting framework that allows agents to assess the health of their counterparties and to understand the likely outcomes in the event of liquidity or solvency problems. Past crises and the recent one in Asia have also shown that individual countries can be substantially affected by developments in other countries, as a result of spillover effects. While such contagion may not always be fully rational, certain factors such as trade and financial linkages, and common structural weaknesses appear to explain a lot of the observed spillovers. Real sector linkages between emerging markets have grown in recent years and it has become clear from recent experience that the financial links between them have also become very important.

To the extent that surges are fueled by moral hazard or imperfect information, policymakers in emerging markets need to take steps to reduce expectations of bailouts and to improve transparency in government decision making and the operation of the banking and corporate sectors. However, and whatever their causes, it is important to remember that the market dynamics of surges and reversals are not peculiar to emerging markets, and it is unrealistic to think that they will ever be completely eliminated. If they are indeed likely to be a recurrent feature of the global financial system, it is necessary to put in place institutions and policies to manage and reduce the macroeconomic and financial risks associated with these flows. Strong macroeconomic fundamentals will be a necessary part of the solution, but the recent experience in Asia suggests that sound macroeconomic policies are not sufficient for avoiding all crises. For example, the Asian experience shows that a potential problem with using a nominal exchange rate anchor is that while the private sector is supposed to base its wage and price decisions on the assumption of a fixed nominal exchange rate, the supervisory authorities may want the private sector to hedge its external liabilities just in case the exchange rate cannot be held fixed.

A resilient financial sector is clearly required for coping with abrupt changes in asset prices and capital flows. Countries need to have effective regulatory and supervisory controls, so that financial institutions have the ability and incentives—perhaps including higher capital requirements—to price and manage the risks associated with volatile capital inflows. In addition, this requires effective market discipline whereby the use of the safety net is costly, so that management and owners have an incentive to maintain the health of their institutions. Transparency will be important in this regard, but it will become increasingly challenging in a world where off-balance-sheet exposures are becoming large relative to on-balance-sheet ones and where existing data collection mechanisms are not up to the task of tracking new types of exposures.

Given that there are limits to the pace at which financial sectors can be strengthened, policymakers need to undertake an orderly opening of their financial systems, and may need to consider imposing temporary measures to restrain certain types of inflows. These controls would include various prudential controls that attempt to increase the cost of using external debt—particularly of a short-term nature—thereby internalizing some of the moral hazard and discouraging some of the "hot" inflows. The latter may include Chilean-type controls on capital inflows that can alter the price of external financing. While the effectiveness of such controls may wear off over time, such controls do slow inflows to both the financial and nonfinancial sectors, and buy the authorities time for rectifying some of the weaknesses. Prudential regulations that limit the amount of inflows intermediated through the banking system may also be appropriate.

The recent experience has also made clear that the combination of a weak banking system and an open capital account is "an accident waiting to happen." A particular problem arises with the use of cross-border interbank funding, which can be quickly withdrawn and has been described as the Achilles' heel of the international financial system. Recipient countries may be able to prevent excessive use of such funding by making capital requirements dependent on the nature of banks' liabilities and not just their assets, or by the imposition of a reserve requirement on interbank liabilities that serves as a fee to reflect the implicit guarantee of such funding. Alternatively, changes to risk weights could be used to increase capital requirements on lending banks.

While many of the preceding points were already recognized to some degree prior to the Asian crises, some new issues have been thrown up. First, there may be a need to coordinate financial regulation and exchange rate policy, so that countries that are attempting to peg their exchange rates also strengthen prudential and reporting requirements on financial institutions and corporations. Second, the slow speed at which the limited supervisory and regulatory capacity of many emerging markets can be improved means that nontraditional supervisory measures may warrant consideration, including limiting the safety net to a narrower group of deposit-taking institutions, greater international involvement in the banking system, and limits on foreign borrowing by bank and nonbank entities. Third, since inevitably there will be periodic failures of borrowers, it is necessary to have efficient bankruptcy procedures to ensure rapid resolution of potential crisis-inducing situations.

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